

1. A golf ball comprising:
  - a core having a diameter of about between 1.48" and 1.62";
  - and,
  - a cover comprising:
    - (a) a polyurethane prepolymer comprising:
      - (1) a diisocyanate; and,
      - (2) a polyol; and,
    - (b) a curing agent comprising:
      - (1) a slow-reacting diamine; and,
      - (2) a fast-reacting diamine.
2. The golf ball of claim 1 wherein the diisocyanate is selected from the group consisting of toluene diisocyanate, 4,4'-diphenylmethane diisocyanate, Isophorone diisocyanate and any mixtures thereof.
3. The golf ball of composition of claim 1 wherein the polyol is an ether glycol.
4. The golf ball of claim 1 wherein the polyol is polytetramethylene glycol.
5. The golf ball of claim 1 wherein the curing agent comprises a slow-reacting diamine with diethyl-2,4-toluenediamine.
6. The golf ball of claim 1 wherein the curing agent comprises



- (1) a diisocyanate; and,
- (2) a polyol; and,
- (b) a curing agent comprising:
  - (1) dimethylthio-2,4-toluenediamine; and,
  - (2) diethyl-2,4-toluenediamine.

14. The golf ball of claim 13 wherein the diisocyanate is selected from the group consisting of toluene diisocyanate, 4,4'-diphenylmethane diisocyanate, Isophorone diisocyanate and mixtures thereof.

15. The golf ball of claim 13 wherein the polyol is an ether glycol.

16. The golf ball of claim 13 wherein the polyol is polytetramethylene ether glycol.

17. A golf ball comprising:

a center having a diameter of about 1.42" and comprising 100 PPHR high cis Polybutadiene rubber, 20 PPHR Zinc Acrylate salt, 24.5 PPHR Barium Sulfate, 6 PPHR Zinc Oxide, 3 PPHR Zinc Stearate and 2.1 PPHR 1,1-Di-(tert-butylperoxy)-3,3,5-trimethyl cyclohexane (40% active);

a thread winding layer comprised of polyisoprene rubber and having a thread size of 0.017" x 5/64" so that the thread layer thickness is about 0.08" and the combination of the core and

thread windings has a diameter of about 1.58"; and,

a cover comprising 100 PPHR of prepolymer (TDI @ 6% NCO and PTMEG), 13.2 PPHR of a curative comprising Ethacure® 100 and Ethacure® 300 at a 50:50 ratio and, 2.3 PPHR pigment so that the overall ball diameter is about 1.68".

18. A method of preparing a golf ball having urethane cover comprising the steps of:

providing two matingly engageable mold halves, a first and second mold half, with at least one cavity situated within a face of each mold half;

filling said at least one mold cavity in each mold half with a polyurethane prepolymer comprising a diisocyanate, a polyol and a curing agent comprising a slow-reacting diamine and a fast reacting diamine via a mixhead;

transporting said two mold halves with a conveyor belt;

arresting movement of said two mold halves on said conveyor belt with at least one guide rail and an end stop;

positioning said first mold half below a core loading apparatus;

securing a core to said core loading apparatus;

positioning said core loading apparatus to align said core over a center of said at least one cavity of said first mold half;

lowering said core into said polyurethane prepolymer situated in said at least one cavity of said first mold half so

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that one half of said core is submerged in said polyurethane prepolymer;

releasing said core from said core holding apparatus;

positioning a mold holding apparatus over said first mold half;

lowering said mold holding apparatus over said first mold half;

grasping said first mold half with said mold holding apparatus;

raising said first mold half with said mold holding apparatus;

inverting said first mold half with said mold holding apparatus;

positioning said first mold half over said second mold half so that said at least one cavity in said first mold half is aligned with said at least one cavity in said second mold half;

lowering said first mold half onto said second mold half;

securing said first mold half to said second mold half such that a second half of said core is submerged in said polyurethane prepolymer situated in said at least one cavity of said second mold half;

curing said polyurethane prepolymer;

releasing said first mold half from said second mold half;

removing a golf ball comprising said core and a cover comprised of polyurethane formed from said polyurethane prepolymer.

19. The method of claim 18 further comprising the steps of:  
providing an X-Y table for positioning said two mold halves  
under said mixhead;

placing said two mold halves on said X-Y table; and,  
moving said X-Y table along two axes to position said mold  
halves in alignment and below said mixhead.

20. The method of claim 18 further comprising the steps of:

situating said least one guide rail above a lateral edge of  
said conveyor belt to provide initial lateral alignment of said  
first mold half with said core holding apparatus; and,

situating said end stop above said conveyor belt to provide  
initial horizontal alignment of said first mold half with said  
core holding apparatus wherein the combination of said conveyor  
belt, said at least one guide rail and said end stop provide  
initial alignment with said core holding apparatus.

21. The method of claim 18 further comprising the steps of:

providing said first mold half with at least one pin  
extending above a top face of said first mold half for alignment  
with said core holding apparatus and said second mold half.

22. The method of claim 21 further comprising the steps of:

providing said core holding apparatus with parallel pairs of  
perpendicularly oriented guide rails; and,

moving said core holding apparatus along said guide rails in

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two axes to position said core holding apparatus over said first mold half.

23. The method of claim 22 further comprising the step of:

providing said core holding apparatus with at least one aperture opening on a bottom face of said core holding apparatus that is sized to receive said at least one pin of said first mold half.

24. The method of claim 23 further comprising the step of:

lowering said core holding apparatus so that said at least one pin of said first mold half is matingly engaged with said at least one aperture of said core holding apparatus to provide final alignment of said core holding apparatus and said first mold half.

25. The method of claim 21 further comprising the steps of:

providing said mold holding apparatus with two parallel pairs of perpendicularly oriented mold holding apparatus guide rails and two rotatable mold grippers suspended from said mold holding apparatus, whereby said mold grippers are configured and oriented to grasp said first mold half;

grasping said first mold half with said mold gripper; and,  
rotating said mold grippers to invert said attached first mold half.

26. The method of claim 25 further comprising the steps of:  
 moving said mold holding apparatus with said first mold half  
 attached in position over said second mold half by moving said  
 mold holding apparatus along said guide rails; and,  
 lowering said first mold half onto said second mold half.

27. The method of claim 26 further comprising the steps of:  
 providing said at least one pin of said first mold half with  
 portions that define a wedge slot;

providing said second mold half with at least one aperture  
 opening on a top face of said second mold half and sized to  
 matingly engage said at least one pin of said first mold half;

providing said second mold half with at least one wedge  
 aperture which extends from a side of said second mold half to an  
 opposite side of said second mold half;

providing a slidably engageable wedge within said at least  
 one aperture of said second mold half whereby when said first  
 mold half is lowered onto said second mold half so that said at  
 least one pin of said first mold half is mated with said at least  
 one aperture of said second mold half, said wedge is forcibly  
 slid within said wedge aperture until said wedge releasably  
 engages said wedge slot of said first mold half to temporarily  
 lock said mold halves together.

28. The method of claim 27 further comprising the step of  
 providing a bushing sized to fit within said at least one



aperture of said second mold half and sized to matingly engage said at least one pin of said first mold half.

29. The method of claim 18 further comprising the step of:  
coating said core with a polyurethane prepolymer before submersing said core into said polyurethane prepolymer in said at least one mold cavity in said first mold half.

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